

13. ARTIFICIAL INTELLIGENCE AND COPYRIGHT: THE AUTHORS' CONUNDRUM

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ABSTRACT

In the last few years, the world witnessed the generation of creative works by artificial intelligence (AI). The development of artificial intelligence towards technologies capable of autonomous creation brings to the fore several interesting yet muddled copyright questions. The questions include whether a man-made machine, or intelligent agent, may be regarded as an 'author' in the eyes of copyright law. This question has already sparked debates and differing views. Closely associated with the authorship issue, other issues relating to the duration of copyright in the works and authors' moral rights inevitably arise. In Malaysia, copyright in literary, artistic and musical works is protected during the life of the author plus fifty years after the author's death. If a robot with artificial intelligence is treated as the author of a literary, artistic, or musical work, it has produced a copyright work, and if it subsists, the copyright will be potentially permanent as long as the robot does not 'die'. This paper seeks to examine whether AI-produced works are eligible for copyright protection in view of the non-human author.

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¹ Chloe Olewitz, 'A Japanese AI Program Just Wrote a Short Novel, and it Almost Won a Literary Prize' (*Digital Trends*, 23 March 2016) <<https://www.digitaltrends.com/cool-tech/japanese-ai-writes-novel-passes-first-round-national-literary-prize/>> accessed 1 October 2018.

² Stephen Chen, 'Roses are Red, Violets are Blue; Does AI Poetry Do it for You?' *South China Morning Post* (Hong Kong, 6 June 2017) <<https://www.scmp.com/news/china/society/article/2097044/microsofts-ai-bot-has-published-book-poems-china-it-worth-reading>> accessed 1 October 2018.

Ultimately, this paper aims to determine whether AI-produced works should be protected under copyright law at all.

Keywords: *Copyright law; artificial intelligence; authorship; originality; moral rights; duration of copyright*

1. INTRODUCTION

Lately, the world has witnessed the generation of creative works by artificial intelligence (AI), such as the short Japanese novel, 'The Day a Computer Writes a Novel',¹ and a book of Chinese poems 'The Sunlight that Lost the Glass Window'.² AI is not something new, as it may date from 1950 when a group of researchers commenced a project with the objective of creating machines that are able to accomplish various tasks including learning a language and solving problems.³ Over the years, a subset of AI known as machine learning, the science based on the idea that 'systems can learn from data, identify patterns and make decisions with minimal human intervention,' was developed.⁴ While machine learning involves setting rules into a system to imitate human behaviour, deep learning, a subset of machine learning, supplies data into a model based on a human brain and trains the computer to learn on its own from the data.⁵ Examples of human-like tasks enabled by

³ There is dispute on the origin of AI: see Herbert Bruderer 'The Birth of Artificial Intelligence: First Conference on Artificial Intelligence in Paris in 1951?' in *International Communities of Invention and Innovation* (IFIP Advances in Information and Communication Technology, vol 491, Arthur Tatnall & Christopher Leslie, eds, Springer International Publishing, 2016).

⁴ SAS, 'Machine Learning: What it is and Why it Matters' <https://www.sas.com/en_my/insights/analytics/machine-learning.html> accessed 1 October 2018.

⁵ Examples of human-like tasks enabled by deep learning include speech recognition and image recognition. See SAS, 'Deep Learning: What it is and why it Matters'

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A significant trend to be noted is the increasing autonomy of machines or computers, similar to that demonstrated in Google's self-driving car, which relies on an algorithm teaching itself to drive by observing how a human does it. Instead of being fed with commands to perform a task, an intelligent agent programs itself.⁶ Another example is Google's AlphaGo Zero, which taught itself on playing the Chinese board game 'Go' and wrote an algorithm on its own without any human intervention and defeated the world champion of 'Go' in 2017.⁷ An Intelligent agent is said to have autonomous intelligence if it has the ability to compute information, the ability to learn, and the ability to reason.⁸ The autonomy is the feature which distinguishes AI-produced works from computer-assisted works.⁹ In the latter, human intervention or input is substantial and the computer is merely a tool used to produce a work. In respect of the former, human intervention is minimal or non-existent and the computer is responsible for decision-making in the process where a work is created.

As Bridy commented, we are entering the age of digital authorship where digital works, such as computer software, will autonomously create works

indistinguishable from works of human authorship.¹⁰ It is said that an intelligent agent might not be able to explain every decision or act it makes because some of them may be 'instinctual, or subconscious, or inscrutable', just like many aspects of human behaviour are unexplainable.¹¹ Thus, the creative sparks in the works produced by an artificially intelligent machine may derive wholly from the machine itself. This raises the question whether an intelligent agent may be regarded as the 'author' of works. The issue of authorship in respect of AI-produced works is important as it will in turn determine in whom copyright is vested.

This article examines the authorship issues raised by AI developments by a combination of two approaches: a pragmatic approach by examining whether an Intelligent agent can be taken as an 'author' under the copyright law as it is; and a theoretical approach by asking the question whether an Intelligent agent should be regarded as an 'author' under copyright law. The next section explores the challenges AI-produced works pose to copyright law, namely the concept of 'author.' More specifically, the section studies the questions of originality and non-human creators arising from AI-produced works. This is followed by Section III, which examines the position of the said issues in Malaysia and identifies any peculiar questions arising under the Malaysian copyright law

<https://www.sas.com/en_my/insights/analytics/deep-learning.html> accessed 1 October 2018.

⁶ Will Knight, 'The Dark Secret at the Heart of AI' (*MIT Technology Review*, 11 April 2017)

<<https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/>> accessed 1 October 2018.

⁷ Sarah Knapton, 'AlphaGo Zero: Google DeepMind Super Computer Learns 3,000 Years of Human Knowledge in 40 Days' (*The Telegraph*, 18 October 2017) <<https://www.telegraph.co.uk/science/2017/10/18/alphago-zero-google-deepmind-supercomputer-learns-3000-years/>> accessed 1 October 2018.

⁸ Matthew L Ginsberg, 'Multivalued Logics: A Uniform Approach to Reasoning in Artificial Intelligence' (1988) 4 *Computational Intelligence* 255, quoted in Amir H Khairy, 'Intellectual Property Rights for Hubots: On the Legal Implications of Human-Like

Robots as Innovators and Creators' (2017) 35 *Cardozo Arts & Ent L J* 635, 640.

⁹ See, for instance, the painting 'The Next Rembrandt' produced by computers after studying thousands of Rembrandt's paintings, using deep learning algorithms. See <<https://www.nextrembrandt.com/>> accessed 1 October 2018. Likewise, 'Bob Dylan', a program developed by a researcher, has created more than 100,000 new folk songs.

¹⁰ Annemarie Bridy, 'Coding Creativity: Copyright and the Artificially Intelligent Author' (2012) *Stan Tech L Rev* 5.

¹¹ Will Knight, 'The Dark Secret at the Heart of AI' (*MIT Technology Review*, 11 April 2017)

<<https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/>> accessed 1 October 2018.

relating to AI-produced works. Section IV considers the possible approaches to the said issues relating to AI-produced works, particularly whether AI-produced works should be protected at all, and if yes, who should enjoy the rights with the goals of copyright law in mind. This article ends with a conclusion in Section V.

2. ISSUES ON AUTHORSHIP OF AI-PRODUCED WORKS

The discussion in this section is divided into two parts: the first considers the source of AI-produced works and the questions of originality and authorship related to it; the second discusses whether a non-human entity may be treated as an 'author' under copyright law, a broader and more general question of which the question whether an Intelligent agent can be an 'author' is a subset.

A. THE QUESTION OF ORIGINALITY

A pre-requisite for a literary, musical, or artistic work to be protected by copyright is that it shall be 'original'.¹² 'Originality' under copyright law means 'the expression of the idea must originate from the author in the sense that the work must not be a copy of another work'.¹³ This reflects the Romantic theory of authorship, which holds the author as the source or origin of a work, one who creates a work out of nothing.⁴

In general, 'author' is defined as the creator or maker of a work.⁵ A crucial question to be determined with respect

to AI-produced works is the source of the works. This essentially calls into consideration whether 'originality', or sufficient effort expended in the making of an AI-produced work, originates from the intelligent agent. If there is human intervention or input from the team of researchers who develop the intelligent agent, the intelligent agent may not be regarded as the 'source' of the work and thus could not be the 'author'. In such a case, it is apt to regard the researchers as the authors instead. If AI-produced work is created by the intelligent agent autonomously, wholly at its own will, it follows that the machine is the 'source' of the work.

The Romantic author is perceived as the source of his or her work, which embodies a part of his or her personality.⁶ The subjective choices made in creating a work reflect the author's personality.⁷ If an intelligent agent acts entirely autonomously and makes all the decisions with regard to the works it produced, such self-will may thus establish its 'personality.' As mentioned in section I above, some decisions made by an intelligent agent are instinctual and unexplainable. In such circumstances, it may be argued that the intelligent agent does stamp the works it created with its 'personality'. Be that as it may, copyright law does not impose 'personality' as a requirement for copyright subsistence.¹⁸ For example, the U.S. Supreme Court in *Feist Publications Inc v Rural Telephone Service Co.* was of

¹² Copyright Act 1987, s 7(3)(a) (Malaysia).

¹³ *University of London Press Ltd v University Tutorial Press Ltd* [1916] 2 Ch 601, 608. This definition was also adopted by the Malaysian courts, see for example *Kiwi Brands (M) Sdn Bhd v Multiview Enterprises Sdn Bhd* [1998] 6 MLJ 38, 46.

⁴ Prior to the emergence of the Romantic theory of authorship, 'author' was perceived as a mere craftsman or a vehicle of muse or God. The Romantic theory of authorship departed from this by holding 'author' as the source of inspiration for a work. See Woodmansee, Martha 'The Genius and the Copyright: Economic and Legal Conditions of the Emergence of the "Author"' (1984) 17(4) *Eighteenth-Century Studies* 425-48.

⁵ Copyright Act 1987, s 3 (the definition of 'author').

⁶ Geller is of the view that authors do not personally express themselves all the time and do so to varying degrees. As such, it cannot be assumed that 'authors need copyright to protect the autonomy of all their purported self-expression'. Paul Edward Geller, 'Must Copyright be Forever Caught between Marketplace and Authorship Norms?' in Brad Sherman & Alain Strowel, *Of Authors and Origins* (Clarendon Press Oxford, 1994).

⁷ Jane C Ginsburg, 'The Concept of Authorship in Comparative Copyright Law' (2003) 52 *DePaul L Rev* 1063.

¹⁸ See Kim Treiger-Bar-Am, 'Kant on Copyright: Rights of Transformative Authorship' 25 *Cardozo Arts & Ent L J* 1059 in

the view that the standard of 'originality' does not require any manifestly personal input from the author.⁸

Martinez raised a question on 'originality' of AI-produced works – whether such works are not copied from other works, in view of how an intelligent agent is fed with humongous amount of data.²⁰ However, copying per se does not deny copyright subsistence in a work. In fact, section 7(4) of the Copyright Act 1987 of Malaysia (CA 1987) states that 'a work shall not be ineligible for copyright by reason only that the making of the work, or the doing of any act in relation to the work involves an infringement of copyright in some other work'. Furthermore, 'originality' under copyright law does not mean originality of idea or thought.⁹ The process of creating works itself is derivative in nature and this is clearly recognized under copyright law which protects derivative works such as translations, or adaptations,²³ provided that the author does not slavishly or mechanically copy from others.²⁴

To expect an 'author' to be the *sole* source of *every* element found in a work is therefore unnecessary. What matters is the effort that constitutes 'originality' should have been expended by the author in making the work. The Romantic theory of authorship may not be able to function at all in the age of digital authorship where, for example, the works produced are getting more collaborative in nature. The theory in perceiving the author as the sole origin of a work has failed in instances which involve works for which the making of involves a

which the author pointed out that some, but not necessarily all, artists personally express their innermost.

⁸ *Feist Publications Inc v. Rural Telephone Service Co.*, 499 US 340, 345 (1991).

²⁰ Nicole Martinez, 'Can an Intelligent agent Hold Copyright Protection over its Works?' *The Art Law Journal* (June, 2007).

⁹ *Lau Foo Sun v Government of Malaysia* [1974] 1 MLJ 28, 30. See also *Kiwi Brands* (n 13).

²³ Section 8 of the Copyright Act 1987 provides that derivative works are protected as original works.

²⁴ *L Batlin & Son, Inc v. Synder*, 536 F 2d 486 (2d Cir. 1976).

high number of contributors, such as films, sound recordings, or broadcasts.²⁵

The determining factor is whether the expression of ideas originates from the intelligent agent or the researchers developing it. If the intelligent agent operates like a mere amanuensis, no question of it as the author should arise.²⁶ An AI-produced work may be 'original' so long as the work is created by the intelligent agent with sufficient effort demonstrated during the process of making the work.²⁷ This is due regardless of the fact that the intelligent agent was fed with data before it created the work, similar to situations where a human author is involved. A human author may have read many copyright works written by others before he or she creates a work, and the author is not denied copyright merely because of the reading, provided that he or she does not copy from those works.

B. CAN A NON-HUMAN ENTITY BE AN 'AUTHOR'?

Assuming the 'originality' requirement is satisfied in respect of an AI-produced work, can the intelligent agent, a non-human being, be regarded as the 'author'? The Romantic theory of authorship holds that authors imbue a part of their personality into their creative works, and thus if a work is attacked or modified, it aggrieves the author's soul. The Lockean theory of copyright, on the other hand, is premised on the view that authors should be rewarded for their efforts spent in creating works. Both theories are based on the assumption that authors

²⁵ Marjut Salokannel, 'Film Authorship in the Changing Audio-Visual Environment' in Brad Sherman & Alain Strowel, *Of Authors and Origins* (Clarendon Press Oxford, 1994).

²⁶ *Donoghue v Allied Newspapers Ltd* [1938] Ch 106, 109; cf *Walter v Lane* [1900] AC 539.

²⁷ The Romantic view that an author is a remarkable 'genius' has also been downplayed by judges in various instances. For example, Abdul Malik Ishak J, in *Kiwi Brands* (n 13) 47, expressed that the amount of originality demanded for a work to be protected by copyright is 'very minimal'.

are human beings.²⁸ In other words, the question to be considered is whether ‘originality’ of a work must be traced back to a human entity.

A reference may be made to the monkey selfie case. The question whether animals could be authors was raised in *Naruto v Slater*, which involved several selfies taken by a monkey named Naruto in Indonesia with the camera belonging to Slater, a wildlife photographer.²⁹ The photos were published in a book by Slater and Wildlife Personalities Ltd., in which both Slater and Wildlife Personalities Ltd. were identified as the copyright owners. However, Slater admitted in the book that the photos were taken by Naruto. In 2015, People for the Ethical Treatment of Animals (PETA), as next friends on behalf of Naruto, filed a complaint for copyright infringement against Slater and Wildlife Personalities Ltd. The district court dismissed the suit on the ground that Naruto does not have the standing to sue under copyright law, and this was affirmed by the United States Court of Appeals for the Ninth Circuit. It was because the United States’ Copyright Act does not expressly authorise animals to file cases for copyright infringement under the statute. Several provisions in the Copyright Act, with reference to ‘children’, ‘grandchildren’, ‘widow’, or widower of an author, and ‘legitimate or not’, imply ‘humanity and necessarily exclude animals that do not marry and do not have heirs entitled to property by law.’³⁰

Chapter 300 of the Compendium of U.S. Copyright Office Practices³¹ makes it clear that the United States Copyright

Office will register an original work only if it was created by a human being.³² It explains that copyright protection is confined to original intellectual conceptions of an author and thus the Office will reject a claim if a human being did not create the work.³³ It appears that works created by non-human beings will not be protected in the United States. However, this does not seem to conclusively settle the question of authorship of AI-produced works.³⁴ Indeed, a court of the United States has expressed that ‘as a matter of law, dictation from a non-human source should not be a bar to copyright’.³⁵

In the event where the author is an animal, difficulties arise with respect to determining the rightful representative of the animal, which is illustrated in *Naruto*. The problem does not exist where a corporate entity is taken to be the author. The Copyright, Designs and Patents Act 1988 (‘the CDPA’) of the United Kingdom has special provisions for computer-generated works.³⁶ In the case of a computer-generated work, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.³⁷ ‘Author’ under the CDPA may be an individual or corporate body and thus the company or the team of engineers developing the intelligent agent could be the ‘author’ of a work generated by the intelligent agent.³⁸ However, this approach itself is not free from any problem and this will be discussed further in Section 4.

²⁸ Margot E Kaminski, ‘Authorship, Disrupted: AI Authors in Copyright and First Amendment Law’ (2017) UC Davis Law Review, Vol 51, 589.

²⁹ *Naruto v. Slater*, 888 F.3d 418 (9th Cir. 2018).

³⁰ *ibid.*

³¹ US Copyright Office, Compendium of US Copyright Office Practices § 101 (3d ed 2017).

³² *ibid* s 306.

³³ *ibid.*

³⁴ Kaminski (n 28) 592.

³⁵ *Penguin Books USA, Inc n New Christian Church of Full Endeavor, Ltd* No 96 CIV 4126 (RWS), 2000 WL 1028634 (SDNY July 25, 2000), vacated by 2004 WL 906301 (SDNY April 27, 2004), discussed in Robert C Denicola, ‘Ex Machima: Copyright Protection for Computer-Generated Works’ 69 Rutgers U L Rev 251 (2016), 280-281.

³⁶ See the definition of ‘computer-generated’ in CPDA s 178.

³⁷ CDPA s 9(3).

³⁸ *ibid* s 154(1).

3. THE LEGAL POSITION IN MALAYSIA

The CA 1987 of Malaysia defines an 'author' in relation to the type of work involved.³⁹ 'Author' of a literary work is defined as 'the writer or the maker' of the work while 'author' of a musical work means 'the composer' and 'author' of an artistic work other than photographs refers to 'the artist.'⁴⁰ In respect of photographs, films, sound recordings, or broadcasts, the term 'author' generally refers to the person by whom the arrangements for the making of the work were undertaken.⁴¹ In respect of literary, musical or artistic works, the 'author' appears to be necessarily a human being whereas in respect of photographs, films, sound recordings, or broadcasts, it is possible for a non-human entity be the 'author'.⁴² For example, it was held in *MediaCorp News Pte Ltd & Ors v MediaBanc (Johor Bharu) Sdn Bhd & Ors*⁴³ that the author of a broadcast could be either the person or corporate entity transmitting the program who was responsible for the selection of the contents of the program; while in *Rock Records (M) Sdn Bhd v Audio One Entertainment Sdn Bhd* it was held that the author of a sound recording was the sound recording company, which made arrangements for the recording of the songs in the works.⁴⁴

Hence, it is certain that a corporate body may be an 'author' under the copyright law of Malaysia. This is supported further by the definition of 'qualified person' under the CA 1987.⁴⁵ A 'qualified person' under the CA

1987, in relation to an individual, means a citizen or permanent resident in Malaysia. In relation to a corporate body, a 'qualified person' refers to a corporate body established in Malaysia, and constituted or vested with legal personality under the laws of Malaysia.⁴⁶ Clearly, 'author' under Malaysian copyright law is not confined to natural persons.

As mentioned earlier, an 'author' of literary, musical, or artistic works should be a natural person. Other than the way 'author' is defined in relation to these types of works, a strong reason to support this view is that the computation of copyright duration in these works is based on the life of the author. Section 17 of the CA 1987 provides that copyright shall subsist in literary, musical or artistic works 'during the life of the author and shall continue to subsist until the expiry of a period of fifty years after his death'.

If a corporate body is taken to be the author of these works, copyright may subsist in the works forever provided that the company is not dissolved. Perpetual copyright in any work is undesirable as it will restrict access to copyright works and may in turn hamper the free dissemination of information and knowledge.

One may point to the case of Sophia, the world's first robot given citizenship, to argue that an intelligent agent bestowed with citizenship may fit the definition of 'qualified person' under the CA 1987, namely a citizen or permanent resident in Malaysia.⁴⁷ Even if an intelligent

³⁹ Section 7(1) of the CA 1987 lists literary work, musical works, artistic works, films, sound recordings, and broadcasts as works eligible for copyright.

⁴⁰ CA 1987 s 3.

⁴¹ *ibid.*

⁴² Khaw Lake Tee & Tay Pek San, *Khaw on Copyright Law in Malaysia* (4th edn, LexisNexis 2017), 167. The authors commented that the definition of 'author' in relation to photographs may cover cases where there is no human input in the making of a photograph.

⁴³ *MediaCorp News Pte Ltd. & Ors v MediaBanc (Johor Bharu) Sdn Bhd & Or* [2010] 6 MLJ 657, para 111.

⁴⁴ *Rock Records (M) Sdn Bhd v Audio One Entertainment Sdn Bhd* [2005] 3 MLJ 552, para 20.

⁴⁵ One of the alternatives for a work to be qualified for copyright protection in Malaysia is that the author is a 'qualified person': CA 1987 s 20.

⁴⁶ CA 1987 s 3.

⁴⁷ See Zara Stone, 'Everything You Need to Know about Sophia, The World's First Robot Citizen' (*Forbes*, 7 November 2017) <<https://www.forbes.com/sites/zarastone/2017/11/07/everyth>

agent may be regarded as a 'qualified person' and thus an 'author', it does not resolve the problem with the copyright duration in AI-produced literary, musical, or artistic works.

Another question that may arise with respect to corporate authors is whether they enjoy moral rights like individual authors do. This question was raised in *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd*⁴⁸ in which the court first found that the plaintiff's engineering team was the 'artist' of certain mechanical and electrical engineering drawings within the meaning of 'author' in section 3 of the CA 1987. However, since the works were commissioned by the main contractor, copyright belonged to the main contractor.⁴⁹ Oddly, the court then went on to consider the question of whether the plaintiff, as a company, instead of the engineers who are natural persons, enjoys moral rights in the drawings.⁵⁰ The court first rejected the argument that moral rights cannot be conferred on engineering drawings which are not purely artistic and/or creative as there is nothing in section 25 which provides for moral rights to so confine moral rights.⁵¹

The court found no Malaysian case law on the question of whether corporate authors enjoy moral rights. The case of *Syed Ahmad Jamal v Dato Bandar Kuala Lumpur*⁵²

is the only Malaysian case addressing authors' moral rights, but it dealt solely with an individual author.⁵³ The court also did not find any case on corporate authors' moral rights in Singapore, United Kingdom, New Zealand, Canada, and India. It was however found that section 190 of the Australian Copyright Act 1968 provides that only an individual enjoys moral rights.⁵⁴

The court in *Aktif Perunding* proceeded to hold that moral rights are only available to natural persons due to several reasons. First, section 25(2) of the CA 1987, which provides for an author's identification and integrity rights, expressly states that in the event where an author has died, the author's personal representative may authorise the acts subject to the author's moral rights.⁵⁵ In addition, section 25(4) of the CA 1987 states that an author's personal representative may exercise the author's moral rights under section 25 after the death of the author despite the fact that copyright is not vested in the author or personal representative at the material time.⁵⁶ Likewise, section 25(5) of the CA 1987 allows an author's personal representative to take action for any contravention of section 25 as a breach of statutory duty after the death of the author while section 25(6) explains that any damages recovered by a personal representative in respect of any contravention of section 25 shall devolve as part of the author's estate, as if the right of

ing-you-need-to-know-about-sophia-the-worlds-first-robot-citizen/#5c48e4e446fa> accessed 1 October 2018.

⁴⁸ *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd* [2017] MLJU 605.

⁴⁹ CA 1987 s 26(2)(a) states that where a work is commissioned under a contract of service or apprenticeship the copyright shall be deemed to be transferred to the person who commissioned the work, subject to any agreement between the parties.

⁵⁰ *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd* [2017] MLJU 605, para 38.

⁵¹ *ibid*, para 39.

⁵² *Syed Ahmad Jamal v Dato Bandar Kuala Lumpur* [2011] 2 CLJ 569.

⁵³ *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd*, [2017] MLJU 605, para 40.

⁵⁴ *ibid*, para 42.

⁵⁵ *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd*, [2017] MLJU 605, para 43; CA 1987 s 25(2) provides 'Subject to this section, where copyright subsists in a work, no person may, without the consent of the author, or, after the author's death, of his personal representative, do or authorise the doing of any of the following acts: (a) the presentation of the work, by any means whatsoever, without identifying the author or under a name other than that of the author; and (b) the distortion, mutilation or other modification of the work if the distortion, mutilation or modification - (i) significantly alters the work; and (ii) is such that it might reasonably be regarded as adversely affecting the author's honour or reputation' (emphasis added).

⁵⁶ CA 1987 s 25(4) (emphasis added).

action had subsisted and vested in the author immediately before his death. It was held that the reference to the author's death and personal representative indicates Parliament's intention to confine moral rights to individual authors only.⁵⁷

Another reason for the court's holding that moral rights are only available to individual authors, is the provision in section 25(2)(b)(ii) of the CA 1987 which expressly provides for an author's integrity right in respect of distortion, mutilation or modification of a work that might reasonably be regarded as adversely affecting the author's honour. According to the court in *Aktif Perunding*, 'honour' can only refer to a natural person, not a company⁵⁸. Nonetheless, section 25(2)(b)(ii) of the CA 1987 mentions 'the author's honour or reputation'. It is arguable that even if a company may not have honour, it may have reputation. The third reason for the court's holding is that the entire section 25 of the CA 1987 has no reference to the winding up or dissolution of a corporate author. Such an omission by the legislature is deliberate so as to make moral rights in section 25 available only to individual authors.

While the decision in *Aktif Perunding* has the effect of denying moral rights to corporate authors, it does not address the issue in the event where an intelligent agent is accepted as an 'author'. As discussed earlier, intelligent agents may be given citizenship, such as Sophia, and would thus fit the definition of 'qualified person' under the CA 1987 under the category of *individual authors*, as opposed to *corporate authors*.⁶⁰

⁵⁷ *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd* [2017] MLJU 605, para 43.

⁵⁸ *Aktif Perunding Sdn Bhd v ZNVA & Associates Sdn Bhd* [2017] MLJU 605, para 43.

⁶⁰ CA 1987 s 3, Paras (a) and (b) of the definition of 'qualified person'.

⁶¹ Ralph D Clifford, 'Intellectual Property in the Era of the Creative Computer Program: Will the True Creator Please Stand Up?' (1987) 71 Tul L Rev 1675, 1682.

It may be summarized from the discussion that two aspects remain problematic even if an intelligent agent is regarded as an 'author' under the CA 1987: the possible perpetual copyright in literary, musical, or artistic works produced by intelligent agents, and the availability of moral rights to AI authors. In addition, questions would also arise on ownership of copyright, particularly the enforcement of copyright. How would intelligent agents enforce the rights they enjoy? It is thus concluded that, assuming AI-produced works should be protected at all, the existing CA 1987 is not aptly equipped with the provisions to do so. Nonetheless, the crucial question to be considered is whether AI-produced works should be protected by copyright at all, which would be addressed in the next section.

4. A NEW CATEGORY OF AI-PRODUCED WORKS?

The issue of authorship in AI-produced works under copyright law essentially calls for consideration, whether AI-produced works should be eligible for copyright protection at all. One option is to recognize no copyright in AI-produced works on the ground that computers or intelligent agents cannot be regarded as 'authors' under copyright law.⁶¹ Considering the matter under either the natural rights theory or the Lockean theory, it is debatable whether intelligent agents need incentives to create works.⁶² If there is no limit on the quantity of creative works that may be produced by intelligent agents, it begs the question as to what is the rationale of copyright protection for the works in such circumstances.⁶³

⁶² Pamela Samuelson, 'Allocating Ownership Rights in Computer-Generated Works' (1986) 47 U Pitt L Rev 1185, 1199; Shlomit Yanisky-Ravid & Luis Antonio Velez-Hernandez, 'Copyrightability of Artworks Produced by Creative Robots, Driven by Artificial Intelligence Systems and the Originality Requirement: The Formality-Objective Model' (2018) 19 Minn J L Sci & Tech 1.

⁶³ Shlomit Yanisky-Ravid 'Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era – The

A human author is mortal and thus the number of works he or she may be able to produce during his or her lifetime is limited. A human author may also experience fatigue or even writer's block, which results in a finite number of works he or she may create. All the restraints faced by mortal human authors justify copyright in the works they produce as to reward their efforts. On the contrary, an immortal intelligent agent is not likewise restricted. Therefore, the basis of copyright protection in AI-produced works is equivocal and disputable.

The approach of denying copyright subsistence in AI-produced works will leave all works produced by intelligent agents in the public domain, freely accessible and available for use by the public. The main concern with not recognizing copyright in AI-produced works is whether it will discourage the creation and further dissemination of AI-produced works. However, the AI programmer or the company developing the intelligent agents would, in any event, enjoy protection in the form of either patent or copyright protection for the intelligent agent itself. Thus the worries about the negative impact of not protecting AI-produced works may be unnecessary. This is even more so in view of the fact that human-produced works will still be in existence alongside AI-produced works.

If AI-produced works should be eligible for copyright protection, the next question to answer is who should be vested with the rights. There are three potential candidates to be vested with copyright: first, the intelligent agent; second, the AI programmer or the company developing the intelligent agent; and third, end

users. Apparently, there are serious practical difficulties with vesting copyright in intelligent agents who would not be able to enforce the right on their own. Holding either one of the latter two as the 'author' of AI-produced works gets rid of the need to distinguish between cases where the intelligent agent functions merely as a tool in the creation of the works and where the intelligent agent itself is the creator, which may be extremely difficult to ascertain.⁶⁴ The complication is evident in Australian case law concerned with computer-generated works such as databases and compilations.⁶⁵

Some scholars, particularly in the United States, have proposed to rely on the work made for hire doctrine as the answer to the question of ownership of AI-produced works, since the intelligent agent has no legal personhood.⁶⁶ Under this doctrine, an intelligent agent is regarded as an employee of the company developing it and thus copyright in any work produced by the intelligent agent is vested in the employer, the company. However, the suggested solution has been criticised on grounds including that if an intelligent agent has no legal personhood it may not be treated as an 'employee.'⁶⁷

On the other hand, as mentioned earlier, the CDPA of the United Kingdom provides for computer-generated works.⁶⁸ Copyright protection in computer-generated works shall last for fifty years after it was made.⁶⁹ Moral rights are, however, inapplicable to computer-generated works.⁷⁰ 'Computer-generated' is explained as where a work is generated in circumstances where there is no

Human-Like Authors are Already Here – A New Model' (2017) *Mich St L Rev* 659, 701-704.

⁶⁴ Denicola (n 35) 283.

⁶⁵ Jani McCutcheon, 'The Vanishing Author in Computer-Generated Works: A Critical Analysis of Recent Australian Case Law' (2013) 36 *Melb U L Rev* 915.

⁶⁶ Bridy (n 10) 21-22; Timothy L Butler, 'Can a Computer be an Author – Copyright Aspects of Artificial Intelligence' (1981) 4 *Comm/Ent L S* 701, 739.

⁶⁷ Butler (n 66) 741; Denicola (n 36) 283.

⁶⁸ CDPA s 9(3).

⁶⁹ CDPA s 12(7) states that, 'copyright expires at the end of the period of 50 years from the end of the calendar year in which the work was made'.

⁷⁰ CDPA ss 79(2)(c) and 81(2) state so with respect to the right to be identified as the author and the right to object to derogatory treatment of a work respectively.

human author of the work.⁷¹ Clearly, AI-produced works fall within the ambit of computer-generated works. In the case of a computer-generated work, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.⁷² This definition of 'author' in respect of computer-generated works has enlarged the concept of authorship, 'beyond persons who actually create copyrightable expression to persons who originate the process of creating copyrightable expression.'⁷³

However, questions may arise as to what constitutes the 'arrangements necessary for the creation of the work'. If the arrangements refer to the effort expended by the programmer in developing the intelligent agent and equipping it with the tools to create works, the AI programmer seems to be the 'author.' This will result in the programmer being treated as the author of the intelligent agent as well as of the AI-produced works. There is a practical problem with this interpretation since the 'author,' namely the programmer, may be unaware of the existence of works created by the intelligent agent, where the intelligent agent is made available for use by consumers or end users.⁷⁴ This is so especially where a user may take part in the selection of data to be fed to the intelligent agent and it is the user who initiates the process of creating a work. In such case, it may be argued that the user, as opposed to the AI programmer or the company developing the intelligent agent, has made the 'necessary arrangements' for the creation of the work and thus the 'author' of the computer-generated work.

The determination of who should be vested with copyright in AI-produced works may be considered in light of the objective of copyright law to encourage the

creation of more works. While an intelligent agent itself needs no incentive to produce works, some scholars argued that the AI programmer or the company developing it would be incentivised if copyright is accorded to the works produced by the intelligent agent.⁷⁵ Entitlement to copyright in AI-produced works may operate as a stimulus for AI programmers or companies to invest in research and development relating to AI and to disseminate the works.⁷⁶ However, it is submitted that the AI programmer or the company developing the intelligent agent already enjoys copyright or patent protection for the intelligent agent itself.⁷⁷ To vest copyright in AI-produced works, the said entities may be criticized as overprotecting them at the expense of the users. In addition, as mentioned earlier, there is a practical problem with vesting copyright in the AI programmers or companies: the programmers or companies would be unaware of the existence of works created by end users. The lack of knowledge about the existence of the works would make the enforcement of copyright impossible and would render the rights meaningless.

Alternatively, the end user of the intelligent agent may be regarded as the author of AI-produced copyright works. Nevertheless, Hristov is of the view that end users make the least contribution to the development of AI and copyright should thus not be granted to them.⁷⁸ It has also been noted that the end user has no control over the final output and thus should not be treated as the 'author' of a computer-generated work.⁷⁹ Nonetheless, the same may be said of the AI programmer who have little or no control in cases where works are produced autonomously by intelligent agents.

⁷¹ The definition of 'computer-generated' in CDPA s 178.

⁷² CDPA s 9(3).

⁷³ Robert C Denicola, 'Ex Machina: Copyright Protection for Computer-Generated Works' (2016) 69 Rutgers U L Rev 251, 280-281.

⁷⁴ *ibid*, 283.

⁷⁵ Kalin Hristov, 'Artificial Intelligence and the Copyright Dilemma' (2017) 57 IDEA 431, 445.

⁷⁶ Samuelson (n 62) 1227.

⁷⁷ Shlomit (n 63) 702.

⁷⁸ Hristov (n 75) 443.

⁷⁹ Evan H Farr, 'Copyrightability of Computer-Created Works' (1989) 15 Rutgers Computer & Tech L J 63, 74.

An analogy may be made between photographs and AI-produced works. Consider the role played by an individual user in taking photographs using an AI-powered camera. The AI of such a camera will automatically adjust the settings for a good shot depending on the type of the subject matter and other factors such as the light conditions. It is debatable whether the contribution by the individual user in the creation of photographs justifies the user being treated as the ‘author’ of the photographs. Yet, copyright law clearly does not vest copyright of the photographs in the AI programmer or the company developing the AI-powered camera, but vests it in the individual user. For instance, the ‘author’ of a photograph is defined under the CA 1987 as ‘the person by whom the arrangements for the taking of the photograph were undertaken.’ It appears that it is commonly accepted that the individual user using an AI-powered camera falls within the definition of an ‘author’ despite the little contribution which may be nothing more than aiming the camera on the object and pressing the shutter button.

Returning to the question under discussion, if an intelligent agent is made available to end users to generate creative works, it seems reasonable to vest copyright of AI-produced works in the end users, just like how copyright of photographs taken by an AI-powered camera is vested in the end user. However, the main drawback of this approach is that in the case of AI-produced works the human user who has expended a trivial contribution would be entitled to copyright protected for a relatively long period of time. The duration of copyright in AI-produced works is fifty years, if a model of protection is based on the CDPA.

This paper would like to put forth an idea to be considered when we deliberate over the legal position of AI-produced works: to protect AI-produced works via a

sui generis right. With this option, we could do away with the search for an author. In fact, we can thus avoid accommodating the basic principles of copyright law to address AI-produced works. If AI-produced works should be protected at all, a *sui generis* right like that conferred on databases under the European Union’s Database Directive, may be granted over them to prevent outright and unfair exploitation of the works.⁸⁰ There is nevertheless a need to determine who should own the *sui generis* right and this could be contentious. The main benefits of protecting AI-produced works through a *sui generis* right include the possibility to reduce the duration of protection to a term less than fifty years, the minimum period of protection available under copyright law. Also, the scope of protection should be narrower than that under copyright. In relation to those works, human contribution seems too paltry to justify copyright protection, which is relatively long. This would require a further and in-depth study which is beyond the scope of this paper.

It is submitted that the first alternative stated in the beginning of this section seems to be the best: to impose and stress on a general rule that only works produced by human creativity are to be protected by copyright. An intelligent agent without legal personhood cannot be an ‘author’ and thus no copyright subsists in those works. This should not adversely affect the development of AI since the AI programmer or the company developing the intelligent agent already enjoys copyright or patent protection for the intelligent agent itself.⁸¹

5. CONCLUSION

Copyright law should be slow to protect new types of works where the justification for doing so is far from clear. We should observe whether the absence of copyright protection in AI-produced works will bring any harm to the interested stakeholders. Time will tell

⁸⁰ Directive 96/9/EC, of the European Parliament and of the Council of March 11, 1996 on the Legal Protection of Databases, 1996 O.J. (L 77) 20.

⁸¹ Shlomit (n 63) 702.

whether AI-produced works are indistinguishable from human-created works and whether there is any real demand from the market or the public for such works. With the advancement of AI technology, where creative works may be produced easily and instantly, warrants serious contemplation and deliberation on whether copyright protection for AI-produced works is truly necessary.

We should always keep in mind the option of not recognizing copyright in AI-produced works and refraining from viewing copyright protection as a matter of course. In fact, it is high time to reconsider copyright protection in digital works which involve petty or no human contribution generally. For instance, one may wonder why copyright protects many millions of photographs produced by the use of AI-powered cameras for a very long period, that is to say, during the author's life and fifty years after the author's death. It is highly debatable whether the nominal effort contributed by the so-called author, which may be none other than the mechanical act of pressing the shutter button, gives ground for such a long duration of copyright protection. If the need to protect AI-produced works arises, it may be prudent for the law to make a distinction between AI-produced works and traditional human-created works, with the former being protected by a *sui generis* right and the latter by copyright.

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